

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Carl G. de Marcken et al. Art Unit : 3626
Serial No. : 10/098,580 Examiner : Le, Linh Giang
Filed : March 15, 2002 Conf. No. : 6894
Title : METHOD AND APPARATUS FOR PROVIDING AVAILABILITY OF
AIRLINE SEATS

Mail Stop Appeal Brief - Patents

Commissioner for Patents
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REPLY BRIEF

Pursuant to 37 C.F.R. § 41.41, Applicant responds to the Examiner's Answer dated May 21, 2009, as follows:

35 U.S.C. 103

Summary

The examiner replies to Appellant's argument with a linguistic charade. The examiner extracts "predicted answers" and "returned answers" from claim 28 and reads those words in isolation from the rest of the claim. Without giving consideration to the remaining features that embody these words in the claim, the examiner then summarily concludes that a reasonable interpretation of these words are that they are the same. Next, the examiner chooses to give no weight to the word "predicted" merely because that word appears in the preamble, but inexplicitly ignores the presence of that word in the body of the claim. Then, the examiner addresses features of the claim based on Bailis as inherently storing queries along with the answers without stating that the examiner relies on inherency. Finally, the examiner argues that he can ignore the language of the claims and assume that the word "or" makes a feature optional.

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Claims 28, 30, 32, 56, 58, 59, 71 and 73

Predicted and returned answers

The examiner argues:

Applicant first argues on pgs. 7 and 8 of the 311 6109 Appeal Brief that Bailis does not teach "providing a predicted answer." Examiner disagrees. As per the language of Applicant's claims, the final step of independent claim 28 teaches "returning the retrieved answer as the predicted answer.." (emphasis added). Thus, according to Applicant's own language the "retrieved answer" is the "predicted answer." Applicant argues that Bailis does not seek a prediction of an answer to a query but rather the actual answer. However the language of the claims do not make a distinction between the "retrieved answer" and the "predicted answer" and thus it unnecessary for the prior art teachings to do so either.¹

Appellant contends that the examiner ignores that the claim requires different physical steps be performed on the retrieved answer in comparison to the predicted answer, and thus the examiner's conclusion: "However the language of the claims do not make a distinction between the "retrieved answer" and the "predicted answer" and thus it unnecessary for the prior art teachings to do so either,"² amounts to nothing more than the proverbial "red herring."³ Claim 28 is directed to: "A method executed in a travel planning system for providing a predicted answer in response to a seat availability query from a user." Claim 28 possess a specific distinction between the "retrieved answer" and the "predicted answer" that does not permit the examiner to dismiss the objective of this claim.

The examiner's focus and linguistic exercise is directed to the wrong inquiry. While ultimately the retrieved answer, if valid, is returned as the predicted answer, the retrieved answer is returned only as a result of the processing steps of claim 28. A retrieved answer using the processing of claim 28, however is different from what Bailis would teach as a retrieved answer using Bailis' processing, because the processing required by claim 28 is different from the processing described in Bailis. Put another way, were Appellant to adopt Bailis' processing,

¹ Examiner's Answer p. 14.

² Id.

³ Red herring (idiom), a deliberate attempt to divert attention. From http://en.wikipedia.org/wiki/Red_herring

Appellant would send availability queries to an airline's revenue management system, much as Bailis queries the database when the exact answer was not in the cache. Conversely, were Bailis to adopt Appellant's processing, Bailis would retrieve call numbers that were close to but not the same as the actual call numbers desired, leading to complete disruption in the disclosed telecommunications system of Bailis.

The distinctions between the claim and the reference should be the focus of the examiner's inquiry not whether the "retrieved answer" and the "predicted answer" have the same meaning in claim 28. These terms do not have the same meaning. "Retrieved answer" is the subject of significant processing, whereas "predicted answer" is the expectation of what will be returned from the cache. In some instances the predicted answer and the retrieved answer ultimately become one and the same, but the terms do not have the same meaning as used in the claims.

The examiner's reasoning leads Appellant to believe that the examiner was unaware of what claim 28 actually covered. So, the examiner should have consulted Appellant's specification for guidance and should have read the specification before construing the claim.⁴ By consulting the specification, the examiner would have understood that the objective of the claim is to use a cache as a predictor of how an airline's revenue management system would answer a seat availability query.⁵

Despite being clearly stated in the claim at least by the features of: "retrieving a stored query from a cache that stores seat availability queries and answers ... from previously completed seat availability queries sent to revenue management systems; determining whether at least some fields in the stored seat availability query either match or are substantially close in characteristics to corresponding fields in the user's seat availability query" the examiner chose to ignore that the processing involving the cache seeks to provide an answer that may be close to,

⁴ *Phillips, v. Awh Corporation*, 415 F.3d 1303, 75 U.S.P.Q.2d 1321 (Fed. Cir. 2005) "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification."

⁵ The need for predicting rather than actually querying RMS systems of airlines was recognized by Appellant. See Specification, Summary pages 2-3.

but not necessarily exactly the answer to the query, in order to predict how the RMS system would answer the same query without having to directly query the RMS system.

Preamble limitations

The examiner chose to ignore limitations in the preamble, and as a consequence also ignores and/or misconstrues limitations that appear in the body of the claim as "intended use limitations." The examiner states:

Furthermore, Examiner maintains that "providing a predicted answer" is given little patentable weight as it is found in the preamble and recites an intended use. The claim preamble must be read in the context of the entire claim. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use "can be resolved only on review of the entirety of the [record] to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Corning Glass Works, 868 F.2d at 1257, 9 USPQ2d at 1966. If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir.1999). See also *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir.1997). Applicant argues that "predicted answer" is found in the final limitation of claim 28 but "returning the retrieved answer as the predicted answer.." does not give "predicted answer" any distinct definition. The preamble stating that the method is a system for providing a predicted answer is merely stating an intended use and is not considered a limitation.⁶

The examiner decided to construe the claim without the feature of "providing a predicted answer" merely because it appears in the preamble. This however is improper. "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). See also *Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333, 68 USPQ2d 1154, 1158 (Fed. Cir. 2003). Here

⁶ Examiner's Answer p. 14

the preamble sets for the objective of the invention, which the examiner would have observed had the examiner construed the claim properly.

The specification addresses the problem of how to handle seat availability for large scale/low fare searches that return many travel options (flights + fares) but which have not yet been checked to see if there are available seats. Appellant solves this problem (avoiding computational, time and monetary costs) by building a predictor, in this case a cache, that provides a prediction of seat availability in place of an answer in response to an actual query made to an airline's revenue management system. The preamble therefore necessarily gives life and meaning to the claim, because by reciting a prediction of seat availability, the preamble defines the objective of the claimed invention consistent with the specification.

It is also true that: "Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation. See, e.g., *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989) (The determination of whether preamble recitations are structural limitations can be resolved only on review of the entirety of the application: "to gain an understanding of what the inventors actually invented and intended to encompass by the claim."); See also *Pac-Tec Inc. v. Amerace Corp.*, 903 F.2d 796, 801, 14 USPQ2d 1871, 1876 (Fed. Cir. 1990) (determining that preamble language that constitutes a structural limitation is actually part of the claimed invention).

Here the preamble limitation of "predicting seat availability" is in fact a necessary structural limitation imposed on the claim. See *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1563 (Fed. Cir. 1991) (rejecting an "interpretation [that] would render meaningless express claim limitations"). For without predicting seat availability there would be no point in reciting the RMS system and moreover, the term provides antecedent basis for the last step of claim 28, "returning the retrieved answer as the predicted answer to the user's seat availability query."

The examiner misconstrues the feature as an intended use, citing to *Pitney* arguing: "If ... the body of the claim fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble offers no distinct definition of any of the claimed invention's limitations, but rather merely states, for example, the purpose or intended use of the invention, then the preamble is of no significance to claim construction because it cannot be said to

constitute or explain a claim limitation." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999) (citations omitted). This is clearly erroneous because as pointed out above, "providing a predicted answer in response to a seat availability query" provides the antecedent basis for the last step of claim 28. Therefore, without the preamble the claim is incomplete and does not intrinsically set forth the complete invention.

The examiner incorrectly believes the last step of claim 28 must give the term "predicted answer" a "distinct definition." Apparently, the examiner relies on the *Pitney* consideration of whether the preamble offers "no distinct definition of any of the claimed invention's limitations." However, the examiner ignores the remainder of that consideration also expressed in *Pitney* "because it [the preamble] cannot be said to constitute or explain a claim limitation." However, Appellant has already shown that a predicted answer forms the antecedent basis for one of the steps, of that claim, so by definition "predicted answer" must explain a claim limitation. Further it also explains the processing of the determining step in which if at least some fields in the query are substantially close those in the stored query, the answer corresponding to the stored query can be retrieved and further tested.

Further, a predicted answer is directed to a fundamental distinction over Bailis. In Bailis, a query retrieves from the cache, the exact answer that corresponds to the query, if that answer is present, whereas in claim 28 the query first sees if a retrieved query is close enough and if it is the query results in a retrieval of an answer that does not exactly satisfy the query, but based on processing considerations can be used as a prediction of what the exact answer would be. Therefore, the preamble necessarily breathes life into the claim and necessarily further limits the claim.

Distinctions over Bailis

The examiner states:

Applicant next argues on pg. 9 of the Appeal Brief that Bailis does not teach the limitation "retrieving a stored query from a cache that stores seat availability queries and answers, as well as, the answers." Bailis teaches "...the database engine supplies subsequent, identical queries with the data from cache ..." Thus Bailis clearly teaches retrieving a "stored query" as

**"identical queries" are being retrieved from the "database engine."
Examiner submits that one of ordinary skill in the art would understand a
database to contain "stored" data. Therefore a database engine supplying
subsequent identical queries reads upon "retrieving a stored query ..."**⁷

This portion of the Examiner's Answer deals with the feature of: "retrieving a stored query from a cache that stores seat availability queries and answers to seat availability queries stored from previously completed seat availability queries sent to revenue management systems."

The examiner appears here to rely on an inherency argument that one of ordinary skill would have necessarily recognized that Bailis necessarily had to store the queries along with the answers that are stored in the database. Appellant has not been able to find however where the examiner makes this reliance explicit.

To support a claim that a reference "inherently" discloses a limitation, the PTO must present evidence that "make[s] clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Cont'l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (emphasis added). "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* at 1269 (quoting *In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981)).

The examiner relies on Bailis' teaching that: "'...the database engine supplies subsequent, identical queries with the data from cache ...'"⁸ as sufficient to show that Bailis database necessarily stores queries and the answers to the queries. First the examiner truncates this teaching and in so doing takes it out of context.⁹ Nothing in the un-truncated teaching requires or indeed infers that the query is stored in the cache with the answers. Nor is this necessarily the case. All that passage from Bailis requires is that as long as the data is in the cache is valid, Bailis will supply the data from the cache.¹⁰

⁷ Examiner's Answer p. 15.

⁸ *Id.*

⁹ Bailis Col. 4, line 55: "For as long as the data is valid, the database engine supplies subsequent, identical queries with the data from cache instead of reexecuting the search of the database that originally produced the cached results."

¹⁰ This is explained by Bailis, Col. 4, line 37:

The database in Bailis does not operate in the manner advanced by the examiner. Bailis teaches a database that retrieves records based on a query. There is no provision in Bailis for storing the query with the records. Bailis also teaches query concentration in which a query to a database is serviced from a cache. However, Bailis does not teach that the cache stores the query, Bailis only teaches that the database presumably through the database engine retrieves the result from the cache if the contents in the cache have not been invalidated. Nothing in Bailis suggests that the query is stored with the answers in the cache.

Moreover, it does not follow that the queries would be stored with the answers in the cache. Storage of the queries with the data in the cache would be of no use to Bailis because it is not a change in the queries that cause a change in the results, but a change in the database described by Bailis that changes and hence invalidates the results that are stored in the cache.¹¹

In all of the discussion, the examiner fails to accord any patentable weight to the features of claim 28 pertaining to what is stored – answers from previously completed seat availability queries sent to revenue management systems and fails to consider this in answer to Appellant's arguments. This is also improper for reasons given in the Appeal Brief.

Use of "or"

Not surprisingly, the examiner makes a significant effort to read out of claim 28, the part of the claim that is clearly neither described nor suggested by Bailis because it would be detrimental to the system described by Bailis. Claim 28 also requires: "determining whether at least some fields in the stored seat availability query either match or are substantially close in characteristics to corresponding fields in the user's seat availability query."

In this regard the examiner argues:

'Finally, Applicant argues on pg. 13 that Bailis does not teach "determining whether at least some fields in the stored seat availability query either match or are substantially close in characteristics to

Another aspect of the present invention addresses query concentration. According to this aspect of the invention, query results are stored by the database engine in local cache. With reference to FIG. 5, the query results may be saved as long as they are considered valid.

¹¹ Bailis, Col. 4, line 37: "At this point, the database engine, instead of treating the query as concluded, continues to monitor the database to detect changes to the query results."

corresponding fields in the user's seat availability query." (emphasis added). Thus the language makes it optional to have the matching be exact matching or substantially close matching. Applicant concedes that Bailis requires exactness and Examiner submits that is all the claim limitation requires.¹²

This above argument is a concession by the examiner that Bailis does not suggest determining whether at least some fields in the stored seat availability query are substantially close in characteristics to corresponding fields in the user's seat availability query.

The examiner seeks to avoid this feature by arguing that the step is optional by use of the words "either" and "or." Appellant contends that this reasoning is improper. In claim 28, the method involves a step that seeks to determine what one of skill in the computer arts would recognize as akin to an "exclusive or" operation¹³ on two possible conditions, an exact match or a sufficiently close match. However, this does not make the step or any condition in the step optional and therefore permit the examiner to ignore the feature. By the expressed limitations of the claim, claim 28 requires performing the step of determining and requires checking for the presence of both conditions, albeit only one condition, at most, can exist.¹⁴

The MPEP instructs examiners on optional language stating: "Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation."¹⁵ Nothing in claim 28 makes the step of "determining whether at least some fields in the stored seat availability query either match or are substantially close in characteristics to corresponding fields in the user's seat availability query" optional. The step is required to be performed.

¹² Examiner's Answer p. 15.

¹³ The logical operation exclusive disjunction, also called exclusive or (symbolized XOR or EOR), is a type of logical disjunction on two operands that results in a value of true if and only if exactly one of the operands has a value of true. [1] A simple way to state this is "one or the other but not both." Put differently, exclusive disjunction is a logical operation on two logical values, typically the values of two propositions, that produces a value of true only in cases where the truth value of the operands differ. http://en.wikipedia.org/wiki/Exclusive_or

¹⁴ Appellant notes that the feature "at least some fields in the stored seat availability query either match or are substantially close" cannot include the case where the fields match and are substantially close because the same set of fields that are evaluated cannot both match and be substantially close at the same time, they must be one or the other but not both. Therefore, this is a *de facto* "exclusive or" operation.

¹⁵ MPEP 2100-7 Rev. 5, Aug. 2006

Therefore, the examiner should have considered the features and having implicitly acknowledged that the Bailis cannot suggest, much less describe the feature should have allowed the claim.

Claims 29, 31, 57 and 72

Appellant argued for this group of claims the specific step of: "storing queries and answers from previously completed seat availability queries in the cache ... wherein storing queries includes storing one or more query fields for airline name, flight number, origination, destination, date of query, traveler nationality, point of purchase, frequent flyer status and seller data." Appellant also presented arguments regarding the examiner's use of inherency and personal knowledge which the examiner has refused to address.

Claims 33, 60, and 74

The examiner reasons that: "One of ordinary skill in the art would understand the definition of approximate to be "very similar" or "nearly identical." Thus an approximation does not have to be exact but also does not exclude being exact either. An approximation encompasses exact and inexact matches. Claims to are to be given their broadest reasonable interpretation and Examiner submits that Bailis' matching process reads upon "approximately matching."¹⁶ Again, Appellant takes this as a concession that Bailis neither describes nor suggests "approximate matching." The examiner fails to appreciate the role of a dependent claim. Each of the dependent claims in this group depend from a claim in which the base claim (claim 28 in this case) already includes exact and approximate matching. Thus, to give due consideration to claim 33 it must by definition exclude the exact matching of the base claim and thus by implication the reasoning of the examiner.

Claims 34-35, 61 -62, and 75

The Examiner does not address Appellant's argument. Appellant argued that: "... Bailis' process clearly does not determine whether a query result *retrieved* from the cache is valid. Rather, it determines whether the query results *stored* in the cache are valid, saving only

¹⁶ Examiner's Answer p. 16.

those that are valid...¹⁷ Bailis invalidates an answer in the cache (by a database update) so that the answer is not retrieved. Claim 34 by contrast requires retrieving the answer (from claim 28) and testing that answer for staleness before it is determined if the result is valid.

Claims 36 and 63

The examiner stated: "Applicant makes the argument that the nature of the data in claim 36 is (sic) functional descriptive material."¹⁸ Appellant did not characterize the data in claim 36 as "functional descriptive material." Appellant argued that the claims did not include "non-functional descriptive material." Nowhere in the Brief does Appellant characterize the data of claim 36 as descriptive material. Rather, Appellant considers that data to be functional material that is related to the substrate of the claimed method.

In concluding that: "... the nature of the data in Applicant's claimed invention is non-functional descriptive material,"¹⁹ Appellant contends that the examiner fails to properly construe the claim. As in *Lowry* where the court held that the data structure increased computer efficiency and thus was considered functional, here the characteristics of the query factors influence the way in which the process determines whether a result is stale and thus makes the query factors functionally related to the claimed method. The examiner also incorrectly reasons that: "Any type of data can be considered stale or invalid after a period of time but this does not affect the actual processing in the computer system as was the case in *Lowry*."²⁰, because the reasoning ignores that the query factors further limits how the base claim determines staleness of data in the cache, not based on updates from a database as in Bailis, but based on an analysis of the query factors involved in the actual query, which is clearly tied to the substrate of the method.

¹⁷ Appellant argued that:

Accordingly, Bailis' process clearly does not determine whether a query result retrieved from the cache is valid. Rather, it determines whether the query results stored in the cache are valid, saving only those that are valid. When a result is eventually retrieved, it is already considered to be valid by virtue of it having been saved in the cache. There is nothing in Bailis to suggest that a cached result is checked for staleness after it has been retrieved from the cache.

¹⁸ Examiner's answer page 17

¹⁹ Id.

²⁰ Id. page 18.

Claims 37-41, 64-68, and 76-80

The examiner stated: "Applicant recites similar arguments regarding the functional descriptive nature of the "confidence factor." Examiner incorporates the above rebuttal and maintains that a "confidence factor" is non-functional descriptive material as it is not functionally interrelated to the medium and does not affect the actual substrate of the method. A "confidence factor" is a known indicator in the statistical arts to determine how definite an answer is. Thus a "confidence factor" can be applied to any type of data."²¹

Claim 37 for instance requires: "returning the retrieved answer as the predicted answer where the predicted answer includes a confidence factor corresponding to the predicted answer; and accepting the predicted answer, or not, based on the confidence factor." The confidence factor, thus contrary to the examiner's contention, is functionally related to the substrate of claim 37. The confidence factor controls the determination of whether or not a retrieved answer that is used as a predicted answer is accepted. Thus the features of a confidence factor must be considered by the examiner in determining the novelty over the cited prior art. The fact that confidence factors are known from statistics, and that confidence factors can be applied to all types of data, does not permit the examiner to ignore them as portions of limitations in these claims.

Claims 42-44, 69 and 81

The Examiner does not address Appellant's argument, incorrectly characterizing "confidence factor" as non-functional descriptive material. Appellant contends that the examiner is in error for reasons stated above and notes that the examiner has implicitly conceded that the cited art does not possess any of these features.

Claims 45-48, 70, and 82

The examiner stated: "As per Applicant's arguments regarding claim 45, Applicant's language in the claim states that the model uses as a factor a threshold time. Applicant defines the model as using a threshold time to determine if an answer is considered stale. Thus Applicant's argument that Examiner grossly mischaracterized the "model" is unpersuasive as Applicant defines the model in the claim language

²¹ Examiner's answer page 18.

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(Appeal Brief; pg. 21). Bailis clearly teaches using a timer for determining if an answer is stale (Bailis; Col. 4, lines 50-54).²²

The examiner continues to mischaracterize claim 45. Claim 45 recites: "... wherein predicting produces a confidence factor according to a model using as a factor in the model a threshold time, which if lapsed, indicates that the retrieved answer is considered stale."

The model is more than a timer as allegedly taught by Bailis. The examiner contends that Appellant has defined the model in the claim. Appellant has merely defined one of the factors (produces a confidence factor according to a model using as a factor in the model a threshold time) that is important in the model. Appellant describes various models that can be used in the context of claim 45.

Therefore, for these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the rejection should be reversed.

Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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²² Examiner's answer page 18.